SMF	**Introduction and Process Overview**
SMF	LUFT manual define scope/introduction - LUSTs, Home Heat Oil …
LAX	How to use the LUFT Manual in conjunction with what other guidelines reference
OAK	Audience = all stakeholders
OAK	Endorsement meatball
SMF	Stakeholder creation for UNIFORM (statewide) application of manual
LAX	History section, Explaining the story about how/why tank regs were developed
SMF	List of applicable state policies simplified
SMF	Applicable regulations including St. Bd. Res. No. 92-49
SMF	Regulatory framework
OAK	Regulations and policy affecting process
SNA	Laws, Regulations, Policy Guidelines defined
SMF	Multi-tiered approach to: characterization, risk assessment, remediation, and closure
SMF	Provide a section on process-flow diagram how to use LUFT manual
LAX	General flowchart from asst – remed – closure
LAX	Flowcharts
OAK	Roadmap to no further action needs to be provided in Chapter 1
SMF	Communication and cooperation process between Reg, RPs and Consults upfront to define steps
SMF	Communication and cooperation between Reg, RP, Consult, and Fund
OAK	Develop communication - processes, frequency, face-to-face/electronically
OAK	Community participation
SMF	Science behind SCLs or WOQs
OAK	Basic science and what you need to know (refer to peer reviewed reference documents)
SNA	CHHSL and PRG screening level's role; relationship between existing tools and the LUFT manual (purpose of the LUFT Manual)
SNA	How existing tools for screening (i.e. CHHSL and PRGs, soil gas procedures) fit into the process of cleaning up and assessing a leaking UST
SMF	Fiscal responsibility
SMF	Green technology and procedures - intro
SNA	Sustainability
SMF	DEFINITIONS
SMF	**Roles and responsibilities**
LAX	How to choose a consultant
LAX	RP responsibilities
LAX	Regulator responsibilities
LAX	**Regulatory Responsibilities**
LAX	Regulatory oversight authority
LAX	Don’t skip or skim over soil only cases
LAX	Agency process for redevelopment of either closed or open cases (i.e. residential/mixed use)
LAX	UST cleanup fund
LAX	Public participation
LAX	**RP –Regulator relations (subset of regulatory responsibilities)**

LAX	New case gets initial meeting between RP, consultant and regulator to determine direction, timing, funding issues, etc.
LAX	Required periodic case review meetings: initial, annual, biannual
LAX	Include guidance on communication i.e. when to consider additional talks between RP, agency, stakeholders to keep project moving/on track. Examples are: Changes in land use/bldg footprint; New release, added RP atop old RP's active case; Technically complex project; and Major milestones (tech selection, delineation completion, etc.).
LAX	Communication w/Regulator should be regular and routine
LAX	Identify relationships
LAX	Communication between RP, regulator and State Fund
SMF	**Dispute Resolution**
SMF	Resolving Disputes
SMF	Expedited enforcement
SNA	**Standards of Practices**
SNA	Include requirement for PG/PE licenses in manual
SNA	Business and Professinal (7800 et seq.) Code/ Licensing Requirements (Title 16, Div. 29, Section 3065)
SNA	For RPs - follow guidance in business or professions code when selecting a consultant
SNA	Remedy(ies) - Regulator misconduct (an avenue to correct abuse)
SMF	**Conceptual Site Models**
SMF	Development and validation of SCM
SMF	Site conceptual models
LAX	How to create a conceptual model
OAK	Importance of and how to prepare a CSM (example of acceptable model)
OAK	Robust CSM
OAK	Prepare flow chart for CSM development
SNA	Developing a robust site conceptual model
SMF	Initial SCM with initial dynamic workplan for investigation
OAK	Fate & transport
OAK	Beneficial use of groundwater
LAX	Performing accurate sensitive receptor surveys early in process of assessment
LAX	Identifying nearby sensitive receptors
LAX	Preliminary investigation defines whether remediation needs to be done or not
LAX	Decision making using the SCM (hypothesis, developing evidence, justification for remedy, closure or more investigation)
OAK	Complete CSM - site assessment, risk assessment, identify data gaps, propose recommendations
OAK	CSM with a risk-based assessment component
OAK	CSM must be developed prior to corrective action
LAX	Using your SCM to get cleanup goals/closure criteria
LAX	**Safety**
LAX	Safety considerations – Traffic, workers, public, utilities
LAX	Health and safety plans

OAK	**Workplan**
OAK	Workplan objectives and rationale
OAK	Present rationale for proposed scope of work
OAK	Workplan development guidelines
OAK	Process for developing an adaptive workplan
SMF	Data quality objectives
LAX	Use of Data Quality Objectives to assure representative and statistically significant data collection
OAK	Data quality objectives clearly stated
SMF	Dynamic WP for investigations
OAK	The comprehensive workplan - as compared to an iterative wkp, description of assessment goals/objectives, description of decision tree/flow chart, timeline and interim reporting (progress reporting format)
SMF	**Site Assessment**
SMF	Defining assessment objectives
SMF	Definition elements of each phase of project
SMF	ID data gaps during investigation
LAX	How to determine if your site is adequately characterized
LAX	Recommended characterization requirements
OAK	Site assessment process
SNA	Standardize guidelines for robust SCMs, site assessment, RBCA that we can use across the board for consultants, RPs and regulators
SNA	Good guidance for site characterization and risk assessment
SMF	Soil, vapor and groundwater sampling techniques
SMF	Maximize data collection for investigation
SMF	Sampling frequency and analytes
LAX	Site assessment + include best/worst scenarios for their use (i.e. major do's and don'ts that distill best practices and learning)
LAX	Strategies for investigating a new LUST site without harming the environment
OAK	Rationale for selection of assessment tools/methods
OAK	Triad should be incorporated into process
OAK	Soil, groundwater, vapor
SNA	Describe all available methodologies for assessment and applicable situations for use
SNA	Advantages and limitations of assessment technologies
SNA	Rapid characterization approaches
SMF	Sensitive receptor surveys
LAX	Permits need to be considered during site assessment and cleanup phases
SMF	Investigation and remediation soils only cases
LAX	Subsurface Geologic considerations when advancing borings and screening wells – Don't go through aquitards
LAX	What do you do, if substrate is all boulders? Thus you cannot drill
OAK	Need for adequate site assessment and continuous cores should be mandatory
OAK	Characterization of site stratigraphy to identify soil and groundwater sampling intervals
OAK	When can you use direct push technology?
OAK	CPT vs. continuous core for vertical delineation
OAK	Transects for horizontal and vertical characterization
OAK	Initial evaluation of groundwater vs. continuous evaluation

OAK	When to use grab groundwater & MW networks
LAX	Soil sampling (techniques for procedures)
SMF	Well construction
LAX	Well design standards
SNA	Well design for different uses
SNA	well development
SMF	Groundwater monitoring program
SMF	GW sample collection: turbidity reduction, wells with sheen
LAX	X-Y-Z plot showing concentrations @ depth with plume configuration
LAX	GW Depth-Discrete sampling. GW sampling methods
SNA	GW purging and sampling
SMF	Soil vapor investigation
LAX	Continuous coring assessment of Vapor Intrusion pathways
LAX	Soil gas surveys
OAK	Depth of sampling and protocol for vapor sampling
OAK	When do you need to assess the soil vapor pathway by specific sampling methods?
SNA	when are soil gas studies required?
SNA	address SV/VI in manual
SMF	Mass flux evaluation guidance
SMF	Concurrent soil mass and plume delineation
LAX	Estimating mass in soil and GW
SMF	Waste Disposal
SMF	**Laboratory Analytical Data**
SMF	Physical and chemical properties of fuel and methods to determine them
SMF	Required chemical analyses (including methods, cleanups, and issues re: turbidity in groundwater samples)
LAX	Analytical requirements
LAX	Analytical requirements for soil/groundwater/vapor
SMF	Analytical methods
LAX	Standard Analytical methods
LAX	Identify PQLs/MDLs/DL standards for each COPC
LAX	Method detection limits
LAX	Reference to current EPA methods
SNA	Analytical Methods Standard analytical test methods for each UST type i.e. used oil tank - 8015 (CCID or modified for oil), VOC, SVOCs, metals, etc.); Diesel fuel tank - 8015 (CCID or modified for diesel/fuel), VOCs, SVOCs/PAHs, etc., etc.
SNA	Gas tank - 8015 (CCID or modified for gas), VOCs, metals, etc.
SNA	List pros and cons of various analytical methods
SMF	List some petroleum hydrocarbons that indicate a release is new.
LAX	Testing for ethanol and methanol
LAX	Fuel oxygenates
LAX	Fuel oxygenates – MTBE, TBA- ethanol a concern? Upcoming/emerging alternative fuels
SMF	QA/QC
SMF	Reporting analytical data
LAX	**Risk Assessment and Management**

SMF	Risk assessment: HHRA - What's included? Who can write one? Who can review one?
SMF	HHRA: Should be tailored to match threat level of site.
SMF	Human and ecological risk assessment
LAX	Health risk assessment
SNA	Risk Assessment Definition Consistency Tiers (Human health, geological, GW)
SNA	Health risk assessment
SMF	Risk assessment should be done @ - PAR, -CAP, -Closure
LAX	Sites near existing wells must have monitoring for leakage (to allow for appropriate responses)
LAX	Don't skip over soil-only cases
LAX	Increase near existing wells
OAK	Use of risk assessment is inconsistent
SNA	Define methodology for prioritizing sites. Based on the priority develop RA and closure criteria
SNA	Consistency in evaluation of site threat
SMF	Mass flux evaluation for protection of water quality
LAX	COC mass flux considerations
LAX	Plume stability evaluation
SNA	Fate and Transport
SMF	Lawrence Livermore UST report and conclusions
LAX	Modeling tools
SMF	Risk assessment: Max. concentration does not equal threat; @CCAP--> Buy-in to site closure criteria, integrate land use planning
SMF	Risk-related exit criteria
LAX	Risk-based site closures
LAX	Risk-based cleanup levels
LAX	Degree of cleanup (amount and speed)
OAK	Low risk criteria
OAK	Defined LRC criteria
SNA	Site-specific Risk-Based closure goals Potential tiered approaches based on risk
SMF	Using institutional controls
LAX	Risk management
OAK	Post NFA risk-management - property redevelopment issues
LAX	Vapor intrusion (Johnson and Ettinger)
LAX	Modeling for assessing vapor intrusion
LAX	Vapor intrusion guidance
SMF	Risk assessment info should be conveyed to the public
SNA	Contact list of specialized regulators who can review risk assessments/RBCA
OAK	**Corrective Action Planning**
OAK	Break CAP process up into more efficient pieces. For example, 1) demonstrate cleanup needed & where, 2) screen remedial technologies applicable to cleanup where needed, 3) test feasibility of more promising technologies, 4) prepare CAP, and 5) prepare RAP.
OAK	CAP needs to have costs included
OAK	Community perception needs to be incorporated into CAP - public participation

OAK	What needs to be remediated? - discussion of toxicity, properties, lack of MCLs for petroleum hydrocarbons; discussion of the multiple regulations that may impact closure or remediation decisions (Title 27, Porter-Cologne, 68-16, etc.); discuss ideas for making the public more comfortable with leaving contamination in place (if remediation not required).
OAK	Solid feasibility study must be developed prior to remedial selection
OAK	Pilot study
OAK	Net environmental benefit analysis - applying metrics and uniform evaluative approach to quantify human and ecologic harm brought by a remedial alternative.
OAK	Prioritize sites by risk - why and how
SMF	**Remediation**
SMF	Efficient and effective remediation
SMF	Defining remediation objectives
OAK	Objectives of remedial actions
SMF	Create new streamlined procedures for catastrophic releases: will be cost effective, will benefit health and environment, must have exp. Access to fund built in.
LAX	Best demonstrated technology
OAK	Define all remediation options
SMF	Remediation: benchmark against natural attenuation
OAK	Factors affecting technology used for remedial action
OAK	How to evaluate if operation of remediation system is satisfying the remedial objective(s) - O&M reports should indicate and justify changes to system operation.
LAX	Interim remedial actions
SMF	MNA and NMNA
LAX	Natural Attenuation
LAX	Indicators of natural attenuation
SNA	Monitored Natural Attenuation
SMF	Groundwater extraction
SMF	Dual-phase extraction
SMF	Traditional remediation techniques
SMF	Bioremediation
SMF	Excavation
LAX	Soil excavation
LAX	In Situ GW remediation techniques (which ones work; techniques/steps)
SNA	Remediation Technology
SNA	Perceptions of Remediation Technologies: DPE, SBE, Air sparge, in situ, sustainability.
SMF	Pilot testing
SMF	Design of vapor extraction systems and air sparging
LAX	Technology Selection
LAX	Best practice case studies/Suggestions for complex or difficult hydrogeologic situations e.g., NAPL recovery; Fractured bedrock; Submerged soil impact zones (perhaps as part of technology selection or assessment technology selection); Evaluation of Remediation technologies; Technology selection criteria
SMF	Design of ozone systems
SMF	Equipment sizing
LAX	SVE Rebound test procedures + what constitutes significant rebound

LAX	Remediation performance optimization
LAX	How to perform an SVE pilot test
SNA	Data reporting during interim remedial actions (USEPA guidelines)
SMF	Evolving technologies vetting process: regulators, RPs, consultants, Cleanup fund
SMF	Evolving technologies: standardized acceptance criteria for new technologies to meet
SMF	Evolving technology evaluation
LAX	During technology selection, balancing cleanup goals w/Greenhouse Gas (GHG) emissions/carbon footprint generated (refer to GHG calc std docs)
LAX	Sustainable remediation considerations – i.e. Carbon Footprint, GHG generation
SNA	Calculating Carbon Footprint for remediation technology
OAK	**Reporting Requirements**
SMF	Report content and requirements for landmark reports such as RAPs CAPs etc. similar to TriRegional Board guidelines
OAK	Report contents
SNA	Closure report template/ consistent format
SMF	Consistent reporting
OAK	Sample report
OAK	Guidelines for cross-sections
OAK	Professionals must show responsibility for work completed
SMF	GeoTracker: minimum fields to be populated and by whom
SNA	Steps for utilizing Geotracker
SNA	Geotracker access options (i.e. reports)
SNA	Recommend Geotracker naming scheme for uploads
LAX	**Case Closure Considerations**
SMF	Site closure
OAK	Site closure methodology
OAK	Road map to closure
SMF	Agency by agency cleanup criteria
SMF	Criteria (or factors to be considered or guidelines) required for closure
SMF	How to determine if a site meets water quality objectives
LAX	Cleanup standard
LAX	Setting risk-based closure goals at low risk sites
LAX	Cleanup goals and/or levels
LAX	Determining appropriate cleanup goal – “How clean is clean”?
LAX	Standard soil clean-up guidelines
LAX	Specific Cleanup goals
LAX	Establish risk-based cleanup levels following completion of assessment
LAX	Performance-based closure goals (i.e. 90% reduction of influent concentrations)
LAX	Closure criteria - Numbers?, Common sense!
LAX	Ethanol cleanup goals
LAX	Groundwater cleanup goals should be site specific, not driven by general MCLs
OAK	Low risk criteria
OAK	Closure vs. clean
OAK	Defined LRC criteria
OAK	Guidance on using various cleanup goals
SNA	Specify closure criteria [conceptual]
LAX	Setting acceptable cleanup timeframes
LAX	Reasonable timeframes

LAX	Estimating residual contamination in soil and groundwater
SNA	Confirmatory sampling @ cessation of remediation
LAX	Institutional controls
LAX	USER-friendly state-wide deed restriction database used by all agencies
LAX	Use of land use restrictions in setting up-front clean up levels
OAK	What conditions could allow engineering controls
OAK	Institutional controls
SNA	Use of engineered controls or deed restrictions to advance closure
SMF	Site closure example
OAK	Post NFA risk-management - property redevelopment issues
SNA	Dormant site status
SMF	Closure appeal process
SNA	Petition process
LAX	**UST Cleanup Fund**
SMF	Fund guidance topic/overview
LAX	Fund pre-approval
SMF	Yearly project scope approval and cost pre-approval
LAX	Only cost-effective remedial activities to be reimbursed (i.e., cutoff of SVE activities when removal diminishes)
SMF	Standardized invoice format
SMF	Consistent reporting format
SMF	**Net Environmental impact of the process (AB32) - Green Chapter**
SMF	Green technology and procedures
SNA	**References and Resources**
	List of referenced documents
SNA	Make recommendations of existing tools (public ones) that can be used to help accomplish tasks - reference where to get info and say how it fits in the LUFT manual
OAK	**Appendices**
SNA	Glossary
SNA	Section w/terminology and/or definitions (increase consistency between agencies)
SNA	Glossary giving guidance to tools - ex. NAPL by API Cal EPA - Vapor intrusion monitoring, etc.
OAK	Define milestones for peer review
OAK	Well construction guidelines
OAK	Analytical sampling guidelines
OAK	Lab analysis, groundwater chemistry, QA/QC, soil chemistry.
OAK	Appendix containing explanation of TPH analyses - silica gel, sediment removal, degradation product chemistry, Dawn Zemo.
OAK	Toxicity of TPH constituents
OAK	Enumerate Geotracker requirements (whole chapter)
OAK	Useful information from other states' LUFT manuals
OAK	Legal precedents
OAK	Sample documents (training/guidance for new folks)
OAK	Common pitfalls, lessons learned (can go across board in each chapter)
OAK	Case studies
SNA	Include site-specific examples